

*RESPONSE UNDER 37 CFR 1.116-
EXPEDITED PROCEDURE EXAMINING
GROUP. 2611

REMARKS

Favorable reconsideration of this application, in light of the following discussion, is respectfully.

Claims 1 and 3-12 are currently pending. No claims have been amended herewith.

In the outstanding Office Action, Claims 1, 3, 5-9, 11, and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Jeong et al. ("Effects of Channel Estimation Error in MC-CDMA/TDD Systems"); and Claims 4 and 10 were rejected under 35 U.S.C. § 103 as being unpatentable over the Jeong et al. reference in view of U.S. Patent No. 6,983,125 to Smee et al. (hereinafter "the '125 patent").

Claim 1 is directed to a method for transmitting data in a telecommunication system that includes at least a first transceiver and a second transceiver linked together by means of at least one communication channel, at least one of the transceivers being mobile, the method comprising: (1) spreading the data over a plurality of components; and (2) an equalization step multiplying each of the components resulting from the spreading step by a corresponding predetermined equalization value representative of communication conditions within the communications channel, wherein at least one predetermined equalization value is determined so as to account for a Doppler effect resulting from a movement of a mobile transceiver, which adversely effects the communication conditions within the communication channel, wherein each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in the communication channel, and an additional noise parameter representative of the Doppler effect.

Applicants respectfully traverse the rejection of Claim 1 as anticipated by the Jeong et al. reference.

The Jeong et al. reference is directed to an analysis of channel estimation error and bit error rate (BER) performance of an MC-CDMA/TDD system with pre-equalization. In

particular, the Jeong et al. reference is directed to a study of the effects of movement of the mobile on the bit error rate and the channel estimation error. As shown in Figure 1 and Equation 1, the Jeong et al. reference discloses a typical MC/CDMA transmitter. Further, in section III, and as shown in equation 9, the Jeong et al. reference discloses an MC-CDMA/TDD transmitter that incorporates pre-equalization at the base station. Finally, in section IV, the Jeong et al. reference discloses the results of a simulation in which "... the channel is assumed to be [a] fast Rayleigh fading channel. Characteristics of the channel estimated for measurements during one time slot are used to pre-equalize data symbols in the next time slot before transmission." In particular, the Jeong et al. reference discloses that a simulation is performed for various speeds of the mobile and time slot durations. See Figures 4-6 of the Jeong et al. reference, which illustrate the results for various speeds.

Further, regarding the simulation, the Jeong et al. reference discloses that

[p]erformance degradation is observed for data bits located near the end of the packet especially when the mobility is high. The results indicate that the time slot length should be chosen short enough and *the mobile speed should be limited* to guarantee a certain level of BER performance. Therefore, the MC-CDMA/TDD system is appropriate for the *indoor application*.¹

Thus, Applicants respectfully submit that the Jeong et al. reference merely discloses the results of a simulation of the effects of mobile speed on the error rate for a CDMA system that uses pre-equalization. As a result of this simulation, the Jeong et al. reference discloses that such systems are only appropriate for indoor applications, i.e., when the mobile is not moving. Thus, rather than proposing a solution to the Doppler effect, the Jeong et al. reference merely discloses a simulation that indicates the magnitude of the problem, but does not offer any solutions. In particular, Applicants respectfully submit that the MC-CDMA/TDD system with pre-equalization shown in section III of the Jeong et al. reference

¹ Jeong et al. reference, page 1776. (Emphasis added).

does not provide any correction for the Doppler effect. In particular, Applicants respectfully submit that the Jeong et al. reference fails to disclose an equalization step by multiplying each of the components resulting from the spreading step by a corresponding predetermined equalization value representative of communication conditions within the communication channel, wherein at least one predetermined equalization value is determined so as to account for a Doppler effect resulting from movement of the mobile transceiver, wherein each predetermined equalization value is calculated using an equation that includes a parameter representative of a noise level in the communication channel and an additional noise parameter representative of the Doppler effect. In this regard, Applicants note that the outstanding Office Action has failed to specifically identify the equation having the two parameters recited in Claim 1. Rather, the Office Action merely refers to Equation 1 (which does not involve equalization), which merely shows that the spread signal is multiplied by a Walsh code. However, Applicants respectfully submit that the elements of the signal sequence $C_m[i]$ are not equalization values, and the sequence is not calculated using an equation that includes two different parameters, a parameter representative of a noise level, and an additional noise parameter representative of the Doppler effect, as required by Claim 1. In any future Office Action, Applicants request that the Office Action explicitly identify the two parameters recited in Claim 1.

Thus, for the reasons stated above, Applicants respectfully traverse the rejection of Claim 1 (and all similarly rejected dependent claims) as anticipated by the '730 patent. While the Jeong et al. reference discloses a study of the effects of mobile speed on error rate, it does not propose a solution and does not disclose the equation having the two parameters recited in Claim 1.

Regarding dependent Claim 3, Applicants note that that claim states that the additional noise parameter representative of the Doppler effects includes a variance that

increases with an amount of time elapsed since the incoming signal has been received by the mobile transceiver. Applicants respectfully submit that the variance, which in general is a well-known mathematical concept, is not disclosed by the Jeong et al. reference. In this regard, Applicants note that the Office Action asserts that the Jeong et al. reference discloses this limitation because the reference discloses states that “the mobile speed and the time slot duration can be dominant parameters that affect the error rate.” However, Applicants note that this statement from the Jeong et al. reference does not teach or suggest that the addition noise parameter representative of a Doppler effect includes a variance that increases with the amount of time elapsed since the incoming signal has been received by the mobile transceiver. The Jeong et al. reference does not disclose an additional noise parameter and does not disclose that it includes a variance. Rather, the cited section in the Jeong et al. reference merely indicates that the mobile speed will affect the error rate. This is confirmed in Figures 4-6 of the Jeong et al. reference, based on the simulation performed by the Jeong et al. authors. However, as discussed above, the authors of the Jeong et al. reference do not propose a solution to the Doppler problem, but merely indicate that the system they studied should only be used indoors.

Independent Claim 7 recites limitations analogous to the limitations recited in Claim 1. Accordingly, for reasons analogous to the reasons stated above for the patentability of Claim 1, Applicants respectfully traverse the rejection of Claim 7 (and all similarly rejected dependent claims) as anticipated by the Jeong et al. reference.

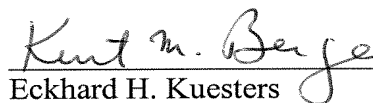
Regarding the rejection of dependent Claims 4 and 10 under 35 U.S.C. § 103, Applicants respectfully submit that the ‘125 patent fails to remedy the deficiencies of the Jeong et al. reference, as discussed above. Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness has not been established and the rejection of Claims 4 and 10 should be withdrawn.

Thus, it is respectfully submitted that independent Claims 1 and 7 (and all associated dependent claims) patentably define over any proper combination of the Jeong et al. reference and the '125 patent.

Consequently, in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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